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Patent
Attorney's Docket No. 026350-070

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Patent Application of)	
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Roumiana TSENKOVA)	Group Art Unit: Unassigned
)	
Application No.: Unassigned)	Examiner: Unassigned
)	
Filed: November 30, 2001)	
)	
For: METHOD AND APPARATUS FOR)	
DIAGNOSING THE PRESENCE OR)	
ABSENCE OF MASTITIS BY USING)	
VISUAL LIGHT RAYS AND/OR)	
NEAR INFRARED RAYS)	

PRELIMINARY AMENDMENT

Assistant Commissioner for Patents
Washington, D.C. 20231

Sir:

Prior to examination, please amend the above-captioned application as follows:

IN THE CLAIMS:

Cancel claims 1-11 without prejudice or disclaimer and add new claims 12-34 as follows:

12. (New) A method for diagnosing mastitis of cows, comprising the steps of irradiating visual light rays and/or near infrared rays in a wavelength range of 400 to 2500 nm into urine, raw milk or a mammary gland of a cow, detecting an intensity of transmitted light rays, reflected light rays or transmitted and reflected light rays from said urine, raw milk or mammary gland, effecting multivariate analysis by using a classification

model based on probability, separability or similarity, and diagnosing the presence of the mastitis of the cow.

13. (New) A method for diagnosing mastitis of cows set forth in claim 12, comprising the steps of irradiating near infrared rays in a wavelength range of 700 nm to 2500 nm into urine, raw milk or a mammary gland of a cow, detecting an intensity of transmitted light rays, reflected light rays or transmitted and reflected light rays from said urine, raw milk or mammary gland, effecting multivariate analysis by using a classification model based on probability, separability or similarity, and diagnosing the presence of the mastitis of the cow,

14. (New) A method for diagnosing mastitis of cows, comprising the steps of irradiating near infrared rays in a wavelength range of 700 nm to 1100 nm or 1100 nm to 2500 nm into urine, raw milk or a mammary gland of a cow, detecting an intensity of transmitted light rays, reflected light rays or transmitted and reflected light rays from said urine, raw milk or mammary gland, effecting multivariate analysis by using a classification model based on probability, separability or similarity, and diagnosing the presence of the mastitis of the cow.

15. (New) The cow mastitis-diagnosing method set forth in any of claims 12 to 14 which comprising scanning wavelengths of incident rays, transmitted light rays, reflected light rays or transmitted and reflected light rays from said urine, raw milk or mammary gland, and applying the multivariate analysis to the thus obtained spectra of the visual light rays and/or the near infrared rays by using the classification model based on the probability, separability or similarity.

16. (New) The cow mastitis-diagnosing method set forth in any of claims 12 to 14, wherein the multivariate analysis is effected of the visual light rays and/or the near infrared rays by using the classification model based on the probability, separability or similarity according to a SIMCA method.

17. (New) The cow mastitis-diagnosing method set forth in claim 15, wherein the multivariate analysis is effected of the visual light rays and/or the near infrared rays by using the classification model based on the probability, separability or similarity according to a SIMCA method.

18. (New) An apparatus for diagnosing mastitis of cows, comprising:
a near infrared ray generator for generating visual light rays and/or near infrared rays in a wavelength range of 400 to 2500 nm;
an optical system for introducing the visual light rays and/or near infrared rays into urine, raw milk or a mammary gland of a cow;

a detector for detecting an intensity of transmitted light rays, reflected light rays or transmitted and reflected light rays from said urine, raw milk or mammary gland;

and a data processor for receiving signals from said detector, and effecting multivariate analysis by using a classification model based on probability, separability or similarity to diagnose the presence of the mastitis of the cow.

19. (New) The cow mastitis-diagnosing apparatus set forth in claim 18, wherein said near infrared ray generator is an infrared ray generator for generating a near infrared rays in a wavelength range of 700 to 2500 nm, an infrared ray generator for generating a near infrared rays in a wavelength range of 700 to 1100 nm, or an infrared ray generator for generating a near infrared rays in a wavelength range of 1100 to 2500 nm.

20. (New) The cow mastitis-diagnosing apparatus set forth in claim 18 or 19 which further comprises an optical fiber from said near infrared ray generator for introducing the visual light rays and/or near infrared rays into said urine, raw milk or a mammary gland of the cow, and transmitted light rays, reflected light rays or transmitted and reflected light rays from said urine, raw milk or mammary gland is led to said detector through the optical fiber.

21. (New) The cow mastitis-diagnosing apparatus set forth in claim 18 or 19, which further comprises a feeder for introducing said raw milk into a sample container via an on-line or at line.

22. (New) The cow mastitis-diagnosing apparatus set forth in claim 20, which further comprises a feeder for introducing said raw milk into a sample container via an on-line or at line.

23. (New) The cow mastitis-diagnosing apparatus set forth in claim 18 or 19, which further comprises a sample container for holding the raw milk, and a temperature controller for stabilizing the milk inside the sample container to a given temperature.

24. (New) The cow mastitis-diagnosing apparatus set forth in claim 20, which further comprises a sample container for holding the raw milk, and a temperature controller for stabilizing the milk inside the sample container to a given temperature.

25. (New) The cow mastitis-diagnosing apparatus set forth in claim 21, which further comprises a sample container for holding the raw milk, and a temperature controller for stabilizing the milk inside the sample container to a given temperature.

26. (New) The cow mastitis-diagnosing apparatus set forth in claim 22, which further comprises a sample container for holding the raw milk, and a temperature controller for stabilizing the milk inside the sample container to a given temperature.

27. (New) The cow mastitis-diagnosing apparatus set forth in claim 18 or 19, wherein the multivariate analysis is effected of the visual light rays and/or the near infrared rays by using the classification model based on the probability, separability or similarity according to a SIMCA method.

28. (New) The cow mastitis-diagnosing apparatus set forth in claim 20, wherein the multivariate analysis is effected of the visual light rays and/or the near infrared rays by using the classification model based on the probability, separability or similarity according to a SIMCA method.

29. (New) The cow mastitis-diagnosing apparatus set forth in claim 21, wherein the multivariate analysis is effected of the visual light rays and/or the near infrared rays by using the classification model based on the probability, separability or similarity according to a SIMCA method.

30. (New) The cow mastitis-diagnosing apparatus set forth in claim 22, wherein the multivariate analysis is effected of the visual light rays and/or the near infrared rays by using the classification model based on the probability, separability or similarity according to a SIMCA method.

31. (New) The cow mastitis-diagnosing apparatus set forth in claim 23, wherein the multivariate analysis is effected of the visual light rays and/or the near infrared rays by using the classification model based on the probability, separability or similarity according to a SIMCA method.

32. (New) The cow mastitis-diagnosing apparatus set forth in claim 24, wherein the multivariate analysis is effected of the visual light rays and/or the near infrared rays by using the classification model based on the probability, separability or similarity according to a SIMCA method.

33. (New) The cow mastitis-diagnosing apparatus set forth in claim 25, wherein the multivariate analysis is effected of the visual light rays and/or the near infrared rays by using the classification model based on the probability, separability or similarity according to a SIMCA method.

34. (New) The cow mastitis-diagnosing apparatus set forth in claim 26, wherein the multivariate analysis is effected of the visual light rays and/or the near infrared rays by using the classification model based on the probability, separability or similarity according to a SIMCA method.

REMARKS

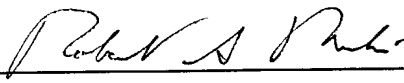
In the original claims, certain multiple dependent claims were improper under the rules of the United States Patent and Trademark Office. By the present Preliminary Amendment, original claims 1-11 have been canceled without prejudice or disclaimer and new claims 12-34 have been added. The new claims are similar to the original claims (e.g., claims 12-15 are identical to claims 1-4), but avoid the use of improper multiple dependency while presenting the originally claimed subject matter in a more organized manner. It is to be understood that the revisions to the claims are solely for formalistic purposes and not with regard to patentability. In this respect, applicants have not disclaimed the right to claim any subject matter that might have been encompassed by the original multiple dependent claims.

Entry of the instant Preliminary Amendment and favorable consideration on the merits are respectfully requested.

Should the Examiner have any questions concerning the subject application, the Examiner is invited to contact the undersigned attorney.

Respectfully submitted,

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